REMARKS

Claims 1 and 3-26 were pending in the application, all of which stand rejected. New Claim 27 is added with this submission.

Claims 1, 8, 9, 12, 14, 17, 18, 21 and 24 are rejected under 35 U.S.C. §102(b) as anticipated by Lashkari et al. (Proc. Natl. Acad. Sci. USA, 1997, 94: 13057-13062). Applicant respectfully traverses this rejection.

Independent Claim 1 recites "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides...." One of ordinary skill in the art would understand the term "synthetic oligonucleotide" to refer exclusively to an oligonucleotide prepared by chemical synthesis. (Decl., ¶4) In particular, one of ordinary skill in the art would understand that in a genotyping method, the "synthetic oligonucleotides" employed in an act of "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides" are chemically synthesized oligonucleotides rather than oligonucleotides prepared by means other than chemical synthesis. (Decl., ¶7) Applicant can find no teaching or suggestion in Lashkari et al. of a microarray hybridized with chemically synthesized oligonucleotides.

The Examiner asserts in section 3 of the Office Action that Lashkari et al. discloses "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides" at page 13058, left column, second paragraph. However, the cited and adjacent portions of Lashkari et al. disclose hybridizing an array with cDNA or with genomic DNA. Such materials are prepared by enzymatic methods, rather than by chemical synthesis. For example, the paragraph of Lashkari et al. cited by the Examiner describes preparation of genomic DNA using Klenow enzyme. One of ordinary skill in the art would not understand the term "synthetic oligonucleotide" to refer to oligonucleotides or oligomers made enzymatically. (Decl., ¶5) In particular, one of ordinary skill in the art would not regard cDNA and genomic DNA to be "synthetic oligonucleotides." (Decl., ¶6)

In contrast to Applicant's citation of the accompanying Rule 132 declaration, the Examiner does not support the rejection of Claim 1 over Lashkari et al. by citing an explicit and authoritative definition of "synthetic oligonucleotide." Instead, in a section of the Office Action entitled "Response to Arguments" (page 4) the Examiner constructs a definition of "synthetic oligonucleotide" from a definition of "synthetic" found in the Academic Press Dictionary of Science and Technology. The definition cited by the Examiner defines synthetic to mean "any product or item that is the result of human technology rather than something that exists in nature." Based on this definition, the Examiner states that

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> [t]he labeled cDNA and the labeled genomic DNA of Lashkari are products that result from human technology and do not exist in nature.... Therefore, the labeled cDNA and the labeled genomic DNA are encompassed by the claimed "synthetic oligonucleotides." (September 19, 2001 Office Action)

Applicant respectfully submits that the Examiner has misconstrued the term "synthetic oligonucleotide." The dictionary cited by the Examiner provides three definitions of "synthetic." The Examiner selected the definition appropriate for engineering. The "engineering" definition is inappropriate in the present context. In particular, a definition of "synthetic oligonucleotide" constructed by juxtaposing the term "oligonucleotide" with the "engineering" definition of "synthetic" provided in the Academic Press Dictionary of Science and Technology would not be equivalent to the meaning of "synthetic oligonucleotide" as it is understood by those of ordinary skill in the art. (Decl., ¶10)

The same dictionary provides a definition of "synthetic" appropriate for chemistry ("relating to compounds formed artificially by chemical synthesis") and a definition appropriate for science ("relating to, produced by, or involving synthesis"). Since oligonucleotides are chemical compounds, the "chemistry" definition is the appropriate definition. In particular, a definition of "synthetic oligonucleotide" constructed by juxtaposing the term "oligonucleotide" with the "chemistry" definition of "synthetic" would be equivalent to the meaning of "synthetic oligonucleotide" as it is understood by those of ordinary skill in the art. (Decl., ¶9) Such a definition would not encompass the cDNA and genomic DNA disclosed in Lashkari et al.

Moreover, a definition of "synthetic oligonucleotide" constructed by juxtaposing the term "oligonucleotide" with the "science" definition of "synthetic" would be equivalent to the meaning of "synthetic oligonucleotide" as it is understood by those of ordinary skill in the art only if "synthesis" were understood to refer to chemical synthesis. (Decl., ¶11)

Hence, Lashkari et al. neither teaches nor suggests "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides" as recited in Claim 1. For at least this reason, Claim 1 is patentable over Lashkari et al. Claims 8, 9, 12, 14, 17, 18, 21 and 24, directly or indirectly dependent on Claim 1, are patentable over Lashkari et al. for at least the reasons for which Claim 1 is patentable over Lashkari et al. New independent Claim 27 is patentable over Lashkari et al. for at least the reasons cited above regarding Claim 1.

Claims 1, 5, 8, 11, 12, 14, 17, 18, 21, 24, and 26 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Brown et al. (U.S. Patent No. 5,807,522). Applicant respectfully traverses this rejection.

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The Examiner states in paragraph 5 of the Office Action that Brown et al. discloses

> ...hybridizing the microarray with a mixture of labeled synthetic oligonucleotide i.e. cloned DNA fragments wherein the mixture comprises oligonucleotides complementary to the genomic segments....

The passage in Brown cited by the Examiner to support his statement reads in part:

> [a] mixture of the labeled cDNAs from the two cell types is added to an array of polynucleotides representing a plurality of known genes derived from the two cell types, under conditions that result in hybridization of the cDNAs to complementary-sequence polynucleotides in the array. (column 4, line 60 to column 5, line 8, emphasis added)

As demonstrated above, cDNAs as disclosed by Brown et al. are distinguishable from the "synthetic oligonucleotides" recited in Claim 1. Hence the disclosure of Brown et al. does not anticipate Claim 1.

The obviousness rejection of Claim 1 over Brown et al. was directed to the portion of Claim 1 which recites "amplifying a plurality of genomic segments" rather than to the portion which recites "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides...." Since Brown et al. does not teach or suggest "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides," the Examiner has not met the requirements of a *prima facie* case of obviousness as set forth, for example, in the MPEP §2142.

For the above reasons, Claim 1 is patentable over Brown et al. Claims 5, 8, 11, 12, 14, 17, 18, 21, and 24, directly or indirectly dependent on Claim 1, are patentable over Brown et al. for at least the reasons for which Claim 1 is patentable over Brown et al.

Independent Claim 26 also recites "hybridizing the microarray with a mixture of labeled synthetic oligonucleotides...." Hence Claim 26 is patentable over Brown et al. for at least the reasons for which Claim 1 is patentable over Brown et al.

New independent Claim 27 is patentable over Brown et al. for at least the reasons cited above regarding Claims 1 and 26.

Claims 3, 4, 6, 7, 9, and 10 are rejected under 35 U.S.C. §103(a) as obvious over Brown et al. This rejection is respectfully traversed. Claims 3, 4, 6, 7, 9, and 10, directly or indirectly dependent on Claim 1, are patentable over Brown et al. for at least the reasons for which Claim 1 is patentable over Brown et al.

Claims 13, 15, 16, and 25 are rejected under 35 U.S.C. §103(a) as obvious over Brown et al. in view of Wang et al. This rejection is also respectfully traversed. Wang et al. does not

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remedy the defects of Brown et al. with respect to Claim 1. Consequently, Claim 1 is patentable over Brown et al. in view of Wang et al. Claims 13, 15, 16, and 25, directly or indirectly dependent on Claim 1, are patentable over Brown et al. in view of Wang et al. for at least the reasons for which Claim 1 is patentable over this combination. New independent Claim 27 is patentable over Brown et al. in view of Wang et al. for at least the reasons cited above regarding Claim 1.

Claims 19-20 and 22-23 are rejected under 35 U.S.C. §103(a) as obvious over Brown et al in view of Fodor et al. This rejection is respectfully traversed. Fodor et al. does not remedy the defects of Brown et al. with respect to Claim 1. Hence, Claim 1 is patentable over Brown et al. in view of Fodor et al. Claims 19-20 and 22-23, directly or indirectly dependent on Claim 1, are patentable over Brown et al. in view of Fodor et al. for at least the reasons for which Claim 1 is patentable over this combination. New independent Claim 27 is patentable over Brown et al. in view of Fodor et al. for at least the reasons cited above regarding Claim 1.

For the above reasons, Applicant respectfully requests reconsideration and allowance of Claims 1 and 3-26 and allowance of New Claim 27. Should the Examiner have any questions concerning this response, the Examiner is invited to call the undersigned at (408) 453-9200.

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Appendix A

The following provides the text of new Claim 27 of U.S. Application Serial No. 09/613,006 (M-9216 US).

27. (New) A method of simultaneously genotyping multiple samples, the method comprising:

amplifying a plurality of genomic segments from a plurality of samples using a plurality of polymerase chain reaction primers, each genomic segment comprising a distinct genetic locus;

forming a microarray on a surface from the amplified genomic segments, wherein each location on the surface contains amplified material derived from a single sample and comprising at least one genomic segment;

hybridizing the microarray with a mixture of labeled synthetic oligonucleotides, wherein the mixture comprises oligonucleotides complementary to the genomic segments; and

deriving genotyping information simultaneously for the plurality of samples at the plurality of genetic loci by detecting signals from the hybridized microarray to thereby genotype the multiple samples.

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